

LVI.—*Further Instances of the Sponge-Spicule in its Mother Cell.* By H. J. CARTER, F.R.S. &c.

[Plate XXI. figs. 26 &amp; 27.]

SINCE my description and figures of the mother cell of the sponge-spicule were published ('Annals,' 1874, vol. xiv. p. 100, pl. x.), I have met with two more examples where the cells respectively enclosed a single tricurvate (flesh-spicule) so nearly approaching in length and form (in one instance especially) to a skeleton-spicule, that I have given representations of them in Plate XXI. figs. 26 & 27, to show also how a long, linear spicule may be thus enclosed throughout in an equally long, bolster-shaped or tubular, nucleated sponge-cell.

Figure 26 comes from a variety of *Esperia agagropila*, Carter; and although much thinner than the skeleton-spicule of this species, it is so slightly undulous and so much longer than the latter, that it might be easily mistaken for a second form of skeleton-spicule, which is contrary to one of the characters that I have assigned to the *Esperiadæ*, viz. that they only possess *one* form of skeleton-spicule. Finding it, however, in a cell (fig. 26, *b*), and seeing it more tricurvate in form in the ovum of the parent (fig. 25), there was no difficulty in concluding that it was the tricurvate of this variety of *Esperia agagropila*. As it appears in the adult it is linear, very thin, smooth, slightly undulous (fig. 26, *a*), and longer than the skeleton-spicule both in the parent and in the ovum which has nearly arrived at the embryonal degree of development (fig. 25, *e*); so that we may fairly assume that this, which is the chief peculiarity of the variety, is constant. In measurement it is more than twice the length of the tricurvate in the typical species, which, on the other hand, gains in stoutness what it loses in length, the former being 90-6000ths inch long. Growing in small patches scantily on the rocks (at Budleigh-Salterton) towards low-water mark, it (with the exception of possessing a much smaller bihamate) agrees with the typical species, viz. *Esperia agagropila*, in the form and size of its single inequianchorates as well as in their rosette-forms, together with all the other characteristics of the latter.

Figure 27, on the other hand, comes from a distinct species of MICROCIONA, Bk., in which the small, abruptly subangular form of the tricurvate in the centre of the spicule contrasts strongly with its greatly extended and almost straight arms. Ending in *spined* extremities, however, causes it to differ from all the species described by Dr. Bowerbank, although that called "*M. armata*" (B. S. vol. ii. p. 129) seems to come so near to it that I cannot help thinking that, if it had been more accu-

rately noticed in detail, there would be no difference between the two whatever. The tricurvate in the adult of this sponge is at once recognized by its form (fig. 27, *a*), while the nucleated cell (fig. 27, *b*) which encloses it, corresponding with its extreme length, presents the same bolster-like appearance or tubular form as that in the variety of *Esperia agagropila* just mentioned.

As this sponge appears to me to be *Microciona armata* of Dr. Bowerbank, I shall describe it under this appellation.

*Microciona armata*, Bk. (?).

General form incrusting, thin, spreading indefinitely. sessile, flat. Colour sponge-yellow or scarlet. Structure consisting of short, erect, scopuliform bundles of spicules in juxtaposition, imbedded in sarcode and based on a minutely reticulated horny membrane. Spicules of two kinds, viz. skeleton- and flesh-spicules. Skeleton-spicules of three forms, viz.:—1st, the largest and longest, curved, acuminate, smooth, except at the large end, which is round and spined; average largest size 45 by 1-1800th in its greatest diameters: 2nd, sub-pinlike, nearly straight, acuminate, smooth throughout except at the inflated end, which may bear one or two minute spines; size variable, from 10 to 30 by  $\frac{1}{4}$ -1800th inch in its greatest diameters (? incipient forms of the foregoing spicule): 3rd, the smallest, short, acuminate, straight, more or less spined throughout or to within a short distance of the point. All these spicules have their large ends fixed in the scopuliform bundle. Flesh-spicules of two forms, viz.:—1st, tricurvate (fig. 27, *a*), abruptly bent into a subtriangular form in the centre, with the arms extended in a more or less straight line on each side, ending in pointed extremities which are spined (fig. 27, *d*); average longest forms 30-1800ths inch in length: 2nd, equianchorate, minute, navicular or weaver's-shuttle-like in form, 1-1800th inch long; these are scattered throughout the sarcode in which the scopuliform bundles are imbedded. General size of species about a line in thickness and of indefinite extent.

*Hab.* Marine, on rocks of the New Red Sandstone conglomerate.

*Loc.* Budleigh-Salterton, south coast of Devon.

*Obs.* This seems to me, as before stated, to be Dr. Bowerbank's *Microciona armata*; and if so, his description is so imperfect that the above will be found absolutely necessary before it can be identified. The characters mentioned easily distinguish it from *Microciona atrosanguinea*, Bk., whose colour, although sometimes also sponge-yellow, is crimson or dark blood-red and not "scarlet" or bright red.

It occurs just now in an advanced oviparous state, from which the embryos are issuing. The latter are ciliated all round except over the root-cells at the posterior extremity, like the embryo of *Halichondria simulans*; but there is no ring of long cilia round the base. It is also much smaller, measuring 22 by 15-1800ths inch in its greatest diameters, which brings it near to the size of the embryo of *Halisarca lobularis* (Pl. XX. fig. 11); while it is remarkable for having the third form of skeleton-spicule, viz. the acute spiniferous one, together with the two forms of flesh-spicules, *alone* developed, all of which, as in other embryos, are confined to the posterior end of the body, where the former (that is, the spined acuates) lie grouped parallel to each other, with their heads posteriorly and their points anteriorly directed, not mixed up heterogeneously in the cell-mass throughout the body (see the position in *Halichondria simulans*, Pl. XXII. fig. 28, e).

This sponge should come into my fourth division, or ARMATÆ—that is, where the spicular skeleton-structure is armed with spined acuates (the echinating spicule), as in *Dictyocylindrus* and the like, since the third form of skeleton-spicule above mentioned appears to be the latter.

I must be pardoned for not believing in the existence of the “bidentate” anchorate mentioned and figured by Dr. Bowerbank here and elsewhere, which I believe to be an optical illusion, since I have sought often and never been able to find one. In no instance does an anchorate appear to me to exist without the elements of the *three* arms or teeth at each extremity, whether it be of the equi- or inequianchorate form.

LVII.—*Note on the Planula- or Gastrula-phase of Development in Mollusca.* By E. RAY LANKESTER, M.A.

PROF. SALENSKY, of Kasan, in a recent paper in Leuckart and Troschel's 'Archiv für Naturgeschichte,' expresses doubts as to the occurrence of a *Planula-* or *Gastrula-*phase of development in certain Mollusks in which I have asserted its occurrence\*. I am anxious to make some reply to Prof. Salensky; and, first of all, I must ask him and others who, rightly enough, are not prepared to accept “bare assertion” to wait until my drawings are published in the 'Philosophical Transactions' for 1875 before speculating as to whether I am right or not. Let me repeat emphatically what is the condition I have observed in the embryos of *Pisidium*, *Tergipes*, *Polycera*, *Limax*, *Lymnæus*, and, I may now add, *Paludina*. The first cleavage of the

\* [A translation of Prof. Salensky's paper has been prepared, and will appear in the next number of the 'Annals.'—ED.]